

NWS Alaska Region: James Nelson WFO Anchorage

Annual Review of NCEP Operational Forecast Systems and Plans for 2005



Alaska Region Challenges

- **Brief Overview of the Alaska Region Challenges**
- **What is new to Alaska Region**
- **Forecast Challenges**
- **Modeling Challenges**
- **Collaboration Challenges**
- **Future Resources?**
- **Ways Alaska Region Can Help**



NWS Alaska Region Overview

- 3 WFOs, 12 WSOs, 1 RFC, 1 Tsunami Warning Center, 1 CWSU, and 1 Alaska Aviation Weather Unit (Alaska's AWC)
- WSOs participate in forecast/warning programs for their “zones”, much like pre-MAR CONUS (minus the new technologies like AWIPS, IFPS), although IFPS, VTEC pose new challenges.



What's New In Alaska Region

- PRISM based Climate grids have been or soon will be ingested into AWIPS and GFE databases at Alaska WFOs.
 - Help with training of forecasters.
 - Can be used to recognize events that are significant deviations from Climate Normals
- Web-based SREF Products.
 - Would like to see a snow amount threshold of 2" as well within the probability category.
 - Need a specific page for Alaska and Hawaii since default is for CONUS.



What Is New in Alaska IOC

- IOC coming soon. Final plans are being set.
- IOC will hopefully bring a new AWIPS workstation to each office to help in backup operations.
- A new AR Methodology Team will be established.
- Experimental Grids will go to NDFD (Max/Min T, PoP12, Wind, Waveheight).
- Requests for more guidance in medium range



Alaska Region Forecast Challenges

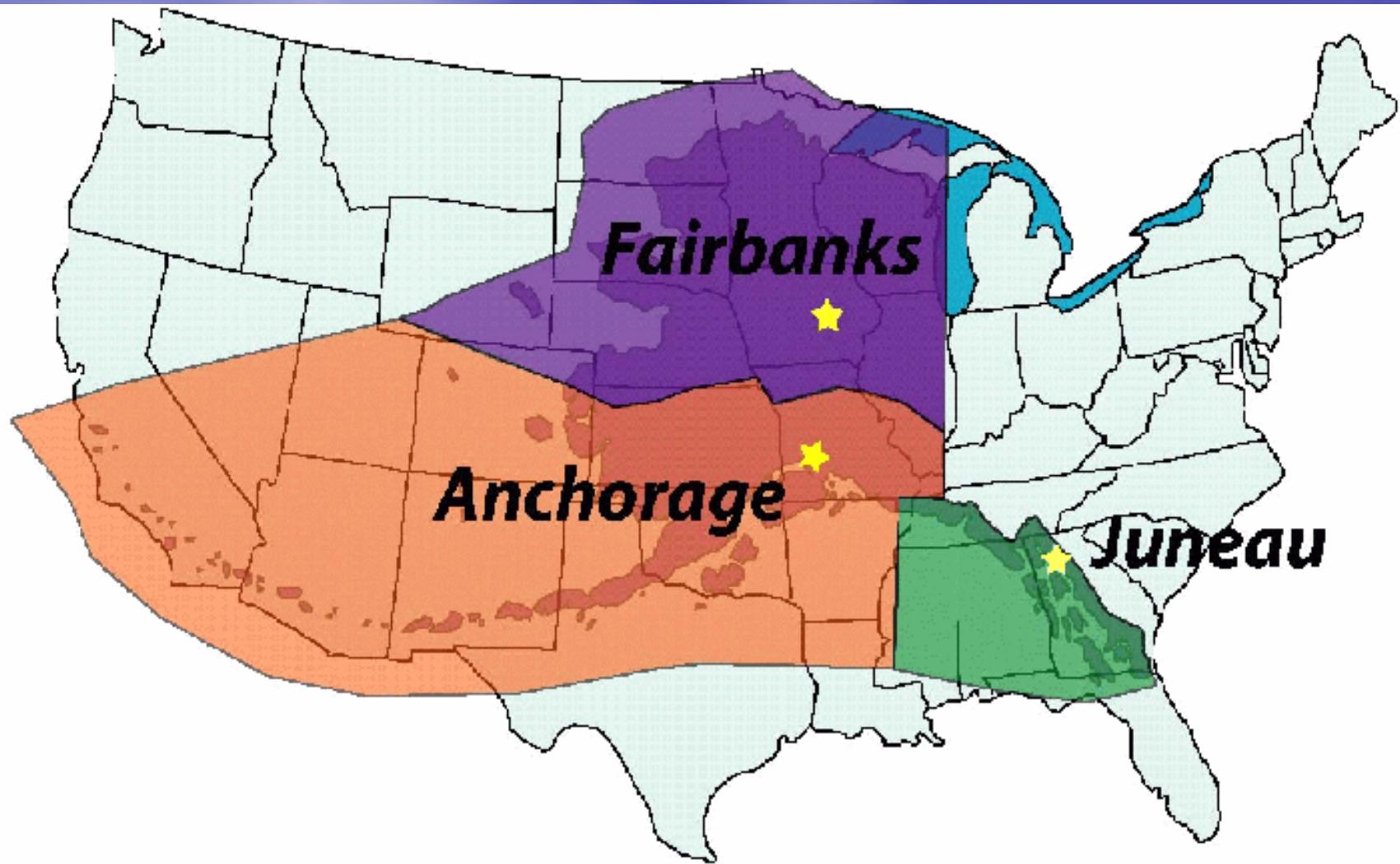
- Size of state
- Extremely complex terrain
 - 5 major mountain ranges in the state
- Long coastline (+35,000 miles).
- Four major oceanic bodies with dramatically differing characteristics (N. Pacific Ocean, Bering Sea, Chukchi Sea, Arctic Ocean).



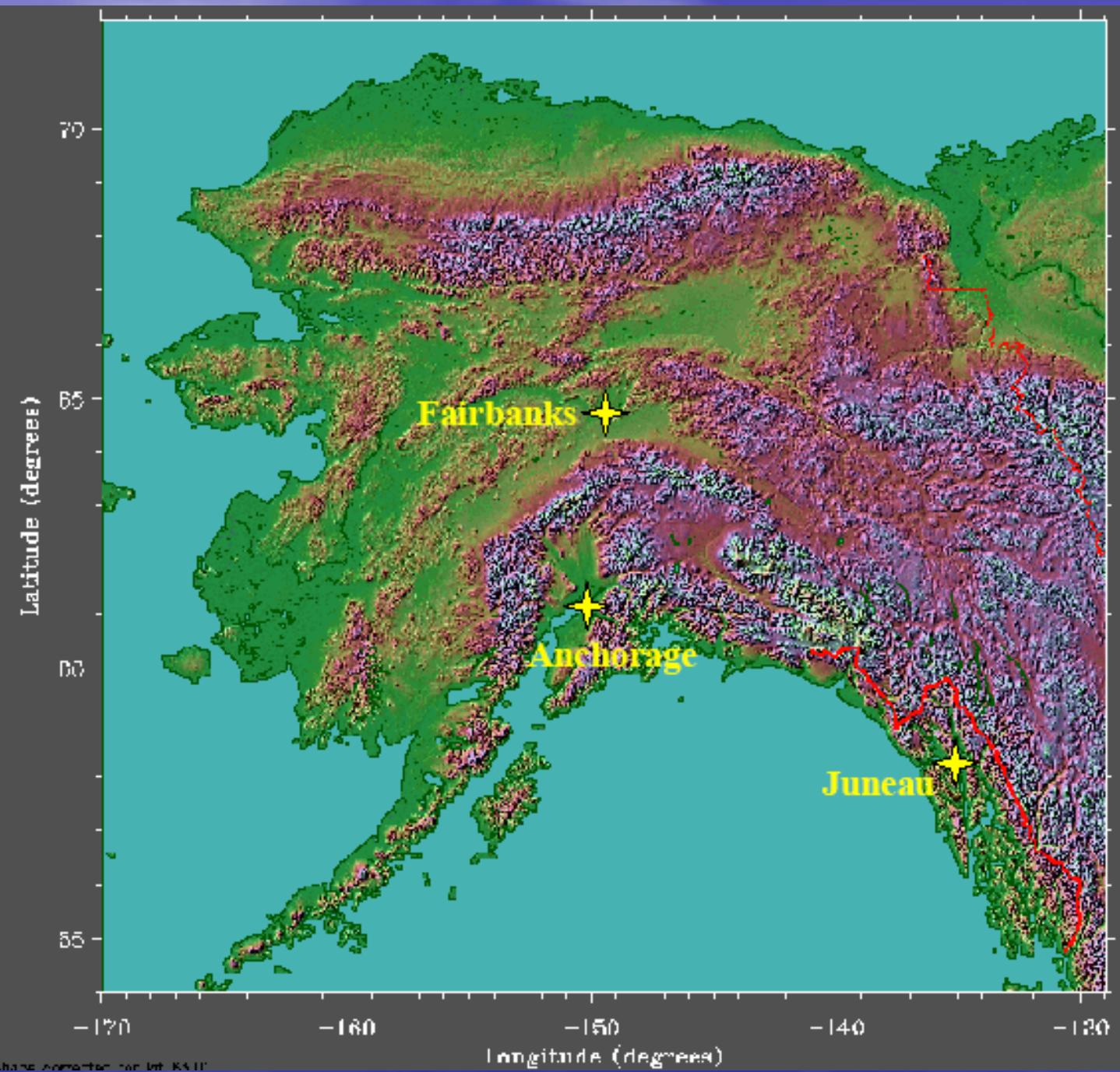
Alaska Region Forecast Challenges (Cont.)

- Limited data resources (i.e. poor radar coverage, northern and western edge of GOES and GMS, data poor North Pacific and Eastern Russia.)
- Lack of sufficient Marine MOS. (Good start, but need all buoy and C-Man sites)
- Starting with lower resolution GFS in AWIPS than model currently being run at (190 km vs 40 km).
- Need for ensemble data past 84 hrs within AWIPS and eventually IFPS.





Size: 31 avg. WFOs covered by land area alone

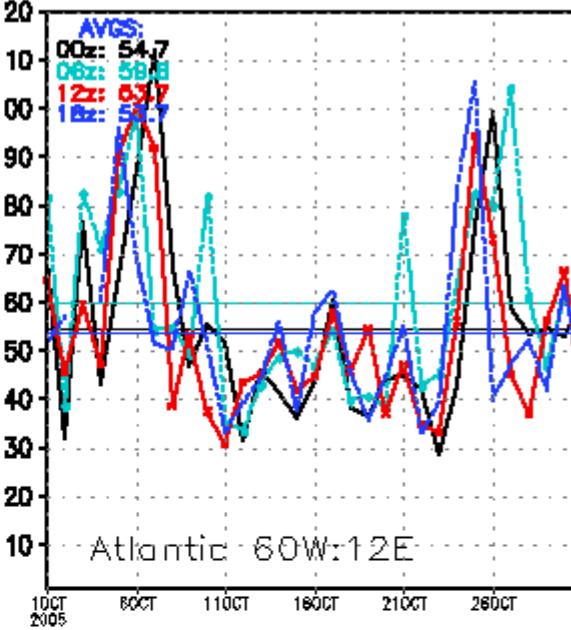
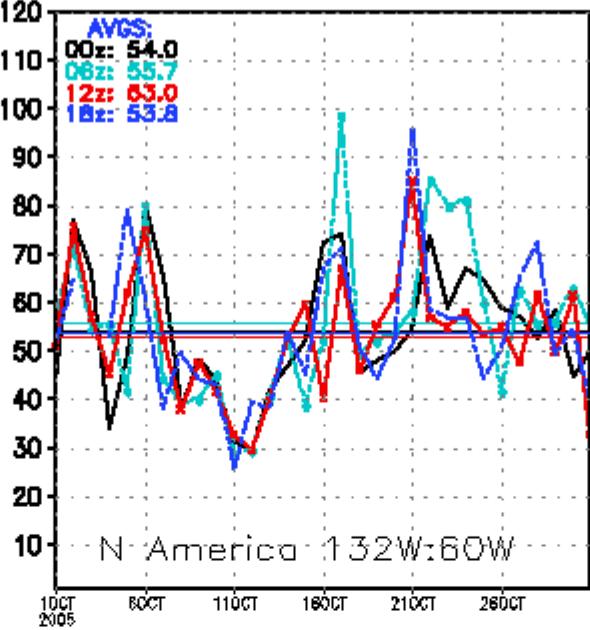
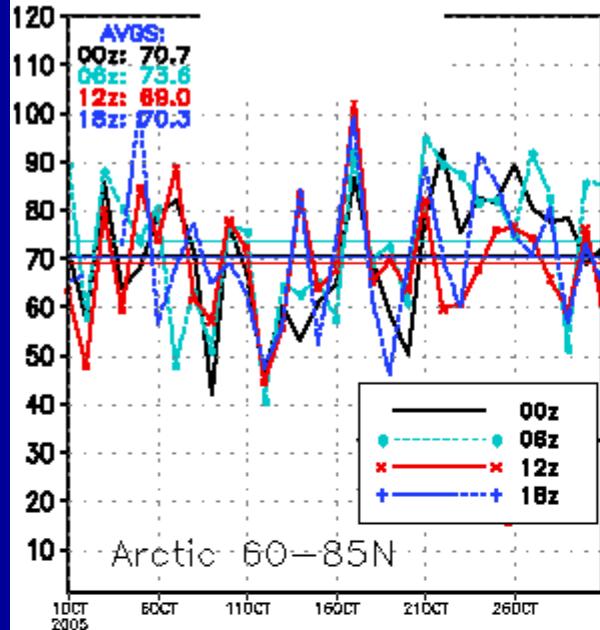


Alaska Region Modeling Challenges

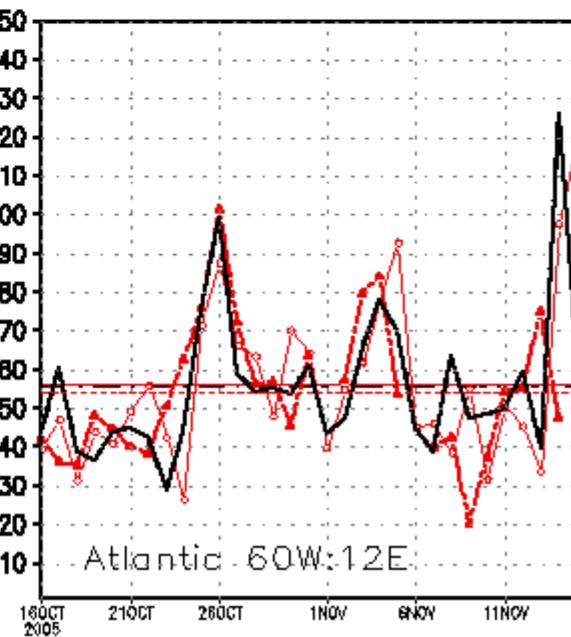
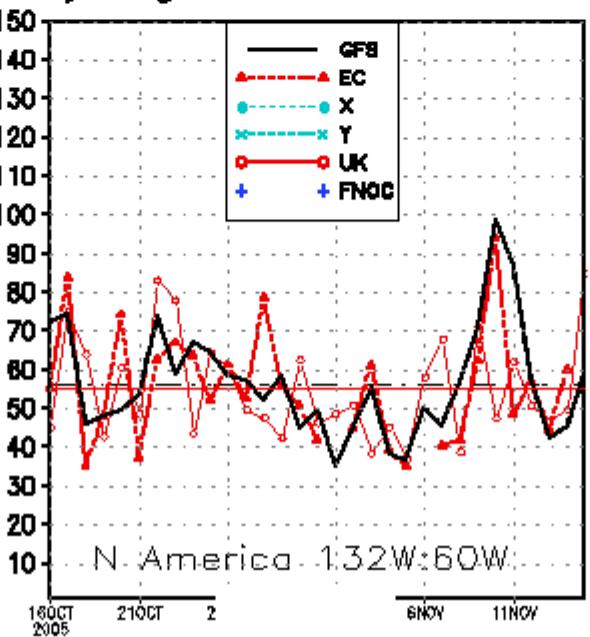
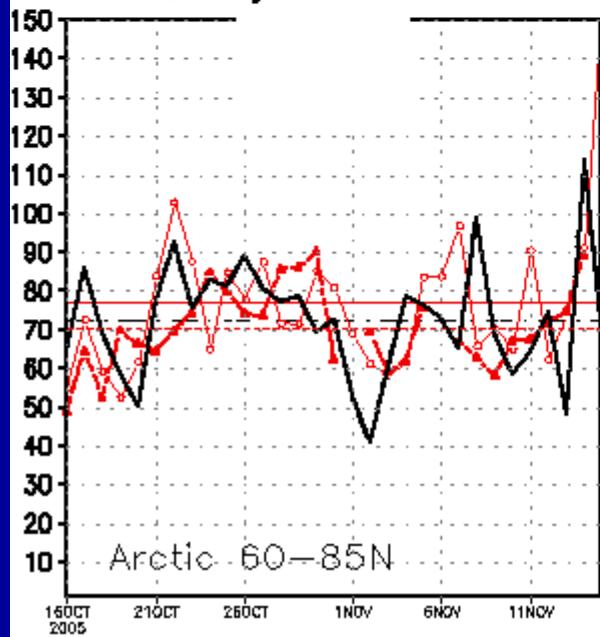
- North Pacific/Gulf of Alaska lack of observations.
(satellite derived products are best source of data)
- Alaska region is on the lateral boundaries of regional models
- Arctic boundary layer poorly resolved
- Terrain inadequately modeled due to model resolution
- Sea Ice and SST not well observed & initialized.



RMS error GFS by cycle, 120h fcsts of Z500 fc verif 20051001–20051031



RMSE, day 5 fcsts of z500 by region, verif 20051016–20051115 GFS–UK shaded



Collaboration Challenges

- Due to Alaska's expansive forecast area and interest in concentrating on high impact events, medium range guidance from HPC would help in the forecast process.
- OPC coordination is also needed in order to fit high seas with offshore and coastal water forecasts.



Alaska Region Future Resources

- RUC for Alaska (Planned WRF-Rapid Refresh)
- Gridded MOS
- Short and Medium Range Ensemble Data to full extent of forecast period for AWIPS and IFPS (maybe not all members but mean and continued web products like new SREF page)
- AoR



Ways Alaska Could Help in Improving Model Performance

- Dedicated Ice Desk completes an analysis of sea ice and SST over AK waters. This data could be ingested into the model initialization to better represent current conditions over AK waters.
- Sensitivity studies with local WRF modelling for enhanced polar boundary layer schemes.
- Performance evaluation of RUC for Alaska and Gridded MOS, then eventually AoR.



